Update

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ANSO
Alliance of International Science Organizations

Special Issue on

ANSO'S DYNAMIC ROLE IN DOMESTIC AND INTERNATIONAL EVENTS

WORLD SCIENCE FORUM SOUTH AFRICA

2022 WSF

ANSO Leads the Chinese Delegation's Participation in the 2022 World Science Forum

The 2022 World Science Forum (WSF) was successfully held in Cape Town in the second week of December 2022. The WSF was hosted by the South African Department of Science and Innovation (DSI), and co-organized by the Hungarian Academy of Sciences (MTA), UNESCO, and a number of other organisations. The Forum was rich in content with 28 thematic sessions and over 20 side events under five plenary sessions covering Science for Human Dignity, Science for Climate Justice, Science for Africa and the World, Science for Diplomacy, and Justice in Science. The Alliance of International Science Organizations (ANSO) had the pleasure of coordinating and leading a few Chinese scientists attending this event at the kind invitation of the organizers. Prof. CAO Jinghua, Executive Director of the ANSO Secretariat, gave a presentation at one of the plenary sessions on behalf of ANSO.

12/6 Opening Ceremony

The opening took place on 6 December, with H.E. Mr. Cyril Ramaphosa, President of the Republic of South Africa giving a keynote address. He raised a few questions including how science can actually bring social justice to Africa, how effective international cooperation can be achieved and carried out in an increasingly complex international situation, how to achieve fair and equal access to scientific innovation and discoveries to close the gap between countries, and how advantage can be taken from the WSF to inspire global S&T action to address inequality, injustice, poverty, climate change, environmental destruction and marginalization.

Also speaking at the opening was the Minister of Ministry of Higher Education, Science and Innovation of South Africa, the President of the Hungarian Academy of Sciences (MTA), the Assistant Director-General for Natural Sciences of UNESCO, the President of the International Science Council (ISC), and the CEO of the American Association for the Advancement of Science (AAAS). H.E. Ms. Katalin Novák, President of Hungary, also addressed the opening. Ministers for science and education from 8 other African countries also participated, plus close to 1,000 representatives from government departments, research and education institutions, international organizations, and the media from 118 countries around the world.

12/8 Plenary Session

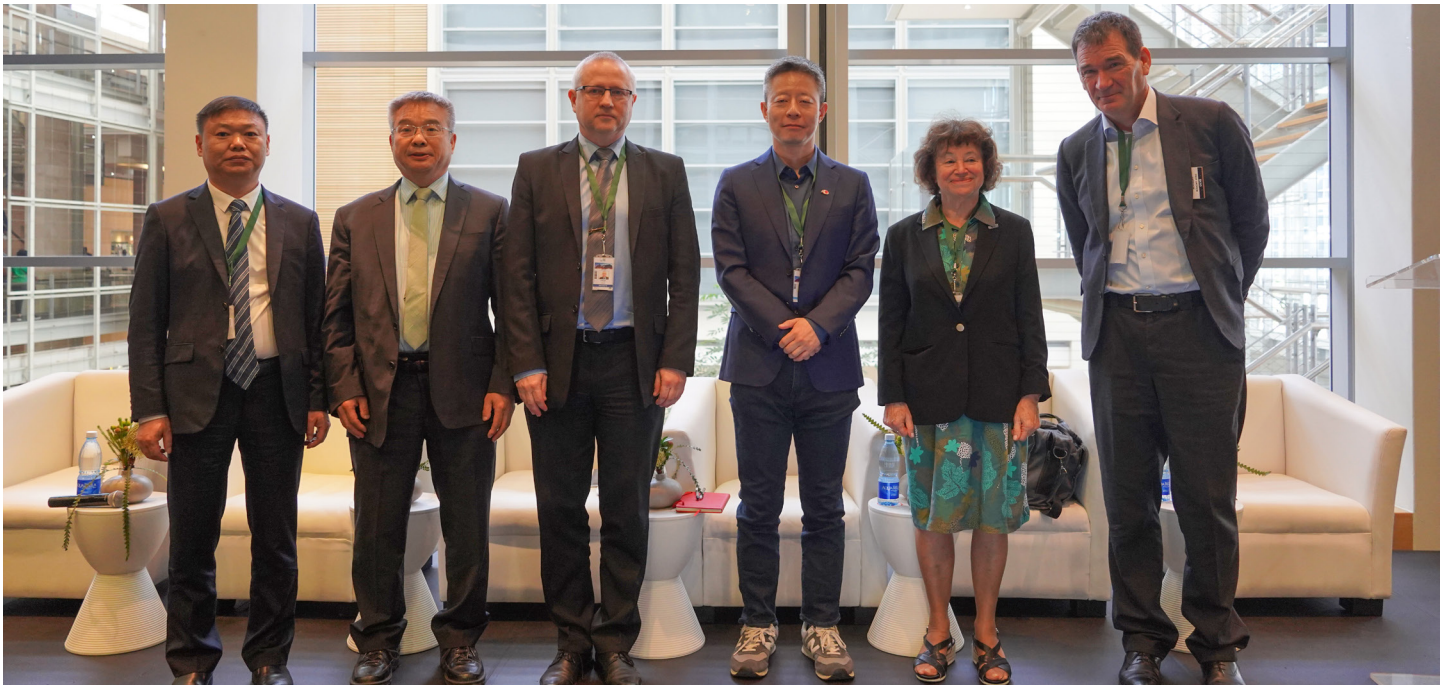
In his talk at one of the five plenary sessions, Prof. CAO first gave a brief account of ANSO's vision and mission and an overview of what the Chinese Academy of Sciences (CAS) and ANSO have done in promoting green and sustainable development of Africa in a past few years. His speech also touched on priority areas of cooperation for African benefits and joint benefits. "We will continue to offer education opportunities, including to the least represented countries and women. To do more science for social justice, that is to help Africa address development challenges. ANSO will focus more effort on science and innovation that can help to make a difference", he concluded.

ANSO also co-hosted a side event on mega science, and a thematic session on curiosity-driven science at the Forum. Both events were warmly received.

Global Challenges Call for Globally Accessible Research Facilities: How to Leverage Large Research Infrastructure Conducting Basic Science for Sustainable Development

Side Event on Leveraging Large Research Infrastructures for Sustainable Development

On 6 December, a side event entitled "Basic Science for Sustainable Development: From the Perspective of Leveraging Global Large Research Infrastructures" was co-organized by the Alliance of International Science Organizations (ANSO), the Hungarian Academy of Sciences (MTA) and the South African Department of Science and Innovation (DSI). This event examined the current availability and future potential of large research facilities to be at the service of basic science working towards the fulfilment of the UN's Sustainable Development Goals (SDGs). The event was part of the celebration for the International Year of Basic Sciences for Sustainable Development.



The session was chaired by Prof. Zsolt Fülöp, President of the National Research Infrastructure Committee of Hungary and Doctor of MTA. Around sixty delegates from a variety of countries attended the event on site.

As arranged, Prof. CAO Jinghua, the Executive Director of the ANSO Secretariat, gave an opening address. He stressed that mega-science facilities often have clear scientific objectives and wide perspectives of application, and often require big investment and advanced cutting-edge technologies. Because of this, they tend to lead advances in academic disciplines, and bring about major scientific discoveries and innovation through exploration of the macro-and microscopic worlds. With a deeper understanding of both worlds, humankind is better equipped to achieve transformational breakthroughs in the service of sustainable development. Prof. CAO also emphasized the high level of importance that China places on international cooperation in mega-science research.

The keynote speakers of the session presented R&D and achievements of various large-scale facilities in an operational or construction phase on five continents, focusing on China, Europe and South Africa. Special attention was given to the impact of this type of infrastructure on societies and sustainable development. The presentations and discussion led to an understanding that while the primary aim of these facilities might be to serve basic research, they are all able to make valuable additional contributions to our endeavors to grapple with the challenges of health, energy, materials development and communication.

Prof. LI Di, the Chief Scientist of the Five-hundred-meter Aperture Spherical radio Telescope (FAST), the National Astronomical Observatories (NAOC) of the Chinese Academy of Sciences, briefed the group on stories from Arecibo to FAST, with a special focus on collaborative research project via FAST. Prof. LI expanded on achievements in several major directions, including in topics related to atomic hydrogen, neutral hydrogen, pulsars, fast radio bursts (FRBs) and extra-terrestrial planets.

Prof. Catherine Cesarsky, Director-General of the International Square Kilometre Array Observatory (SKAO), introduced SKAO, an inter-governmental organization comprised of member states from five continents, and its relation to UN SDGs. With its construction commencement ceremony recently held, a SKAO project in South Africa will promote Africa's involvement in the advancement of large research infrastructure. This includes the upgrade of science and education as well as the potential to address societal challenges such as the promotion of the tourism industry.

Prof. HU Jiansheng, Deputy Director of the Institute of Plasma Physics of the Chinese Academy of Sciences, presented on how clean fusion energy benefits human sustainable development, using the Experimental Advanced Superconducting Tokamak (EAST) as an example. With the benefit of cooperation with more than 120 research institutions around the world, EAST aims to produce sustainable energy and has also contributed to addressing common challenges and creating powerful social and economic impacts.

Prof. Andrew Harrison, Director of Science of the ELI (Extreme Light Infrastructure) Consortium, demonstrated ELI's evolution as a user facility for small science. Additionally, ELI also shoulders the responsibility for training a new generation of scientists and experts through summer schools open to young scientists from various parts of the world.

Prof. CHEN Yu'ao, Executive Dean, School of Physical Sciences, University of Science and Technology of China (USTC), gave a talk on "Quantum Leap: Global Quantum Communication Network and Future Aspects". He introduced the story of Micius, a quantum science satellite launched by China in 2016. Micius has demonstrated intercontinental quantum key communication for the first time and contributed to the 2022 Nobel Prize in Physics. It is believed that this satellite will play a major role in the development of the quantum internet in the future.

In the panel discussion, the speakers had animated discussions centering on the core questions raised, sharing their insights on the operation of the different facilities. This included perspectives on how big-science facilities can benefit African countries, and discussion of future collaboration possibilities and opportunities. All agreed that big science facilities enable an important exploration of the unknown. Further research and collaboration will lead to solutions and technologies needed for advancing the UN SDGs.

A Thematic Session Co-organized by MTA and ANSO
Looking into the Role of Curiosity in Basic Research

On 8 December, a thematic session entitled "What If? Is Curiosity Still the Main Driving Force Behind Revolutionary Ideas in Science?" was held as part of the World Science Forum 2022 in Cape Town, South Africa. The session was moderated by Stephan Kuster (Frontiers), László Lovász (Alfred Renyi Institute of Mathematics) and Éva Kondorosi (Group of Chief Scientific Advisors, European Commission) in attendance as Hungarian Academy of Sciences (MTA)'s delegates, while Nils Stenseth (University of Oslo) represented the Alliance of International Science Organizations (ANSO) as its Science Ambassador. They were joined by Himla Soodyall, the Executive Officer of the Academy of Science of South Africa (ASSAf) and Antoine Petit, the Chairman and Chief Executive Officer of CNRS (the French National Research Centre).

During the session, each speaker gave a presentation on their understanding of the role of curiosity in basic research, drawing on their observations and personal experience. After that a panel discussion was held.

In his lecture, László Lovász used examples from mathematics to demonstrate the unpredictability inherent in theoretical research that later led to unanticipated scientific breakthroughs and practical applications that benefit the public at large.

Nils Stenseth from the University of Oslo, Science Ambassador of ANSO, argued that the dichotomy between basic research and applied research made little sense and was generally harmful. He also talked about the potential for basic science in Africa, and introduced the ANSO scholarship program which benefits many young students from the developing world.

Éva Kondorosi drew examples from her own career to illustrate how a new field of science had paved the way for unexpected discoveries and revolutionized a technology with relevance to daily life. She also emphasized that an integrated approach is needed to tackle global challenges, for which support for curiosity-driven research and the safeguarding of academic freedom are the key.

Antoine Petit, explained that he did not find it a good idea to set curiosity-driven research against the impact of science on society. Rather, he argued, the scientific community is responsible for transferring knowledge to the public and bridging the gap between pure research and societal application.

Himla Soodyall focused on the notion of curiosity and said that humankind has an innate capacity for curiosity, for looking for the reasons behind things and trying to come up with answers. According to Soodyall, human solidarity and social justice are also driven by this curiosity.

The five presentations were followed by a panel discussion. All panelists agreed that curiosity-based research is essential and all countries should maintain their basic research capacities as the ground for innovation. Consensus was also reached that communication between experienced scientists and younger generations was important and benefited both parties. Moreover, scientists should also aim to produce policy-oriented reports rather than confining their research to communication within the academic circle.

In the end, the panel called for the scientific community to stay open-minded towards blue-sky thinking, to listen to the views of scientists of different traditions or ages, and to encourage interconnections between the various fields of science to arrive at a truly integrated approach to global challenges.

Convention on Biological Diversity

COP15

Holding a Side Event Entitled "Conservation and Sustainable Use of Biodiversity for Green Livelihoods in Arid Lands" During CBD COP15

"Conservation and Sustainable Use of Biodiversity for Green Livelihoods in Arid Lands", a side event to COP15, was held in Montreal, Canada on December 11, 2022. This event was jointly organized by the Alliance of International Science Organizations (ANSO), and the Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences (XIEG), in partnership with the Administrative Center for China's Agenda 21 (ACCA 21), the Foreign Environmental Cooperation Center of Ministry of Ecology and Environment of the People's Republic of China (MEE), the Nanjing Institute of Environmental Sciences of the MEE, the Global Biodiversity Information Facility (GBIF), the International Center for Integrated Mountain Development (ICIMOD), the International Platform for Dryland Research and Education of Tottori University of Japan, the National Academy of Sciences of Tajikistan, the Institute of Biology of the National Academy of Sciences of the Kyrgyz Republic, the Institute of Zoology of the Republic of Kazakhstan and the Institute of Botany of the Academy of Sciences of Uzbekistan.

Prof. BAI Chunli, President of ANSO, kicked off the meeting by warmly welcoming all attendees and imploring the meeting to leave a solid base for the continuous promotion of biodiversity protection for sustainable development. He pointed out that arid and semi-arid areas account for 41% of global land. Effective policies to protect the biodiversity and sustainability of arid and semi-arid land are lacking due to the fact that a large proportion of these areas are in developing countries, and the unique diversity in these systems is often overlooked. More international cooperation is needed to address the challenges of protection for global benefits. CUI Shuhong, Director General of the Department of Nature and Ecology Conservation of the MEE, said that the relationship between conservation and livelihoods should be properly handled in the conservation of biodiversity in arid lands. He hoped that the participants of the event would share more experiences that could be used for reference and he called for more cooperation to promote the protection of biodiversity in arid areas. Jamal Annagylyjova, Program Officer on Forest Biodiversity and Dryland of the CBD Secretariat, said that the CBD Secretariat highly appreciated the efforts made by XIEG in promoting biodiversity conservation in arid lands in international forums. The MOU signed between XIEG and the CBD Secretariat is a key measure for enhancing international cooperation in biodiversity conservation in arid areas. The Secretariat looked forward to more cooperation with XIEG in scientific and technology research, capacity building and development of biodiversity of arid lands. Tim Hirsch, Deputy Director of the GBIF Secretariat, said that the arid lands account for about one third of the global land surface area and harbor rich and unique biodiversity as a foundational support to human livelihoods and well-being. It is urgent to step up biodiversity conservation in these areas for sustainable development.

During the invited presentation session, wonderful reports were given by KE Bing, Deputy Director of the ACCA 21, Prof. Lise Korsten, Co-director of the Science and Innovation Department of the Center of Excellence in Food Security of the National Research Foundation of South Africa, LI Yonghong, Deputy Director of the Foreign Environmental Cooperation Center of the MEE, Prof. Roman Jashenko, Director of the Institute of Zoology of the Republic of Kazakhstan, Tim Hirsch, Deputy Director of the GBIF Secretariat, Prof. MA Keping at the Institute of Botany of Chinese Academy of Sciences, and Prof. ZHANG Yuanming,

Director of XIEG. They made presentations respectively entitled "Important Progress and Prospects of Biodiversity Conservation Supported by Science and Technology in China", "Conservation and Use of Arid Lands Biodiversity for Green Livelihood", "Support the Implementation of the CBD and Deepen International Cooperation on Biodiversity Conservation", "Biodiversity Conservation Alliance for Arid Land Conservation: Voice from Central Asia", "Open Biodiversity Data as a Tool for Conservation of Dryland Ecosystem", "Biodiversity Conservation Priority Areas in Arid Lands" and "Challenges and Solutions to Biodiversity Conservation in Arid Lands".

During the expert discussion, experts from South Africa, Spain, Uzbekistan, Turkmenistan, ICIMOD, and the Nanjing Institute of Environmental Sciences of the MEE actively exchanged ideas and shared the latest achievements and views on the main threats faced by the Succulent Karoo Biodiversity Hotspot. They also discussed the biodiversity status quo of the Central Asian desert ecosystems, monitoring technologies for biodiversity in arid areas, successful cases of plant-soil conservation, and the relationship among the inter-governmental science policy platforms on biodiversity and ecosystem services.

Rahimi Farhod, President of the National Academy of Sciences of Tajikistan, said in his speech at the closing ceremony that Tajikistan joined the UNCBD in 2004. The academy and the XIEG jointly established the Central Asian Ecological and Environmental Research Center (Dushanbe) in 2016 to carry out research on biodiversity conservation and utilization. He called on countries to shore up cooperation, increase investment in capital and human resources, and deal with the biodiversity crises and various environmental problems through concerted effort.

At the meeting, the XIEG, together with domestic and foreign scientific research institutions and international organizations, jointly launched the Biodiversity Conservation Alliance in Arid Lands (BCAA). Under the guidance of the CBD and its related protocols, the BCAA will pool the wisdom of scientists from multiple countries, focus on the problems and challenges of biodiversity conservation in arid lands, and conduct joint research on key issues such as mechanisms leading to species endangerment, improvement of ecosystem services, and conservation and sustainable development of biological resources in arid lands.

Prof. ZHANG Yuanming said that, the BCAA will become an international platform for governments, scientists and local communities to carry out collaborative research, knowledge sharing, capacity building and other activities in conservation and sustainable use of biodiversity in arid lands. In the future, cooperation on biodiversity conservation will be enhanced and expanded with Central Asian and African countries. Chinese experts will share more Chinese solutions in all fields of biodiversity conservation in arid lands to build a shared future for all life in arid lands.

The side event attracted extensive attention from scientists, institutions and environmental protection organizations of many countries. Experts attending the event online and on-site exchanged experiences on sustainable use of biological resources in arid lands, and shared innovative technologies and models that are operable and can improve local human livelihoods and well-being. They called on the international community to pay attention to and protect biodiversity in arid lands, promote cooperation among all stakeholders, respond to the initiative of the UN Decade on Ecosystem Restoration (2021-2030), and make positive contributions to the realization of CBD's vision of "living in harmony with nature" by 2050.

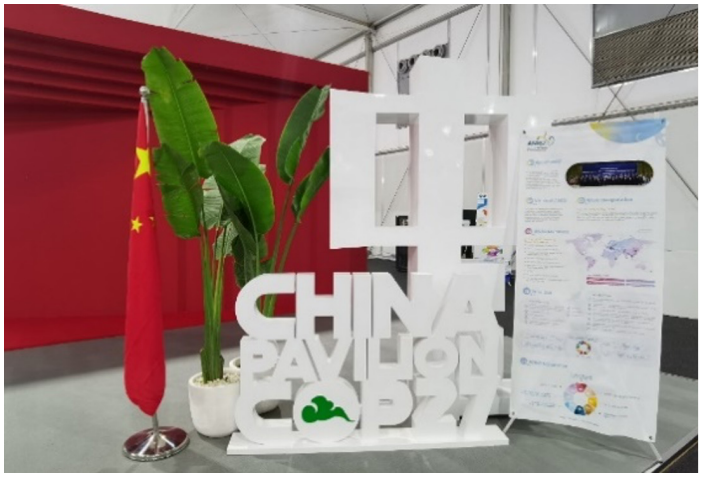
United Nations Climate Change

COP27

ANSO's Active Participation in COP27

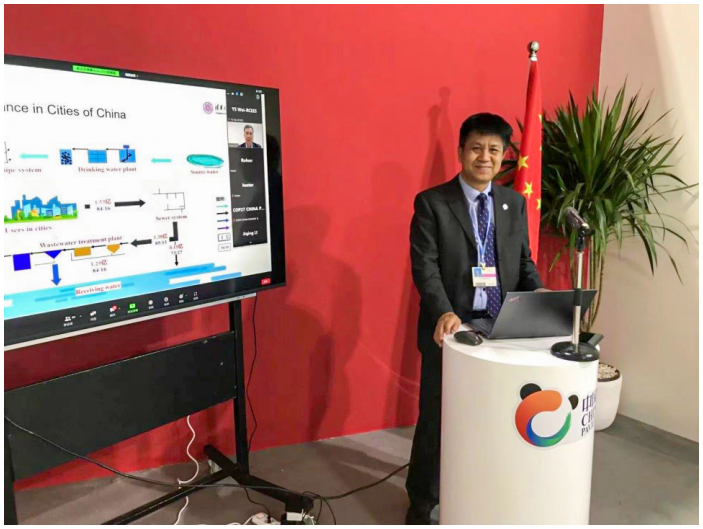
The 27th Conference of the Parties of the United Nations Climate Change Conference (UNFCCC COP27) took place in Sharm El Sheikh, Egypt from 6 to 8 November, 2022. COP27 focused on adaptation to climate change. Officials and representatives from 195 contracting parties, over 1,300 media agencies and nearly 2,000 observer organizations participated in the discussions on over 300 related topics, and the total number of participants reached 45,000.

ANSO and its supported Chinese research teams participated in the conference and organized three side events in the "China Pavilion".



Part. 1

"Water Science and Technology Cooperation under Climate Change"



At the invitation of the Ministry of Ecology and Environment of China, the Research Center for Eco-Environmental Sciences (RCEES) of the Chinese Academy of Sciences (CAS), the Alliance of International Science Organizations (ANSO) and the CAS-WAS Centre of Excellence for Water and Environment (CAS-TWAS CEWE) held a side event both onsite and online on Water Science and Technology Cooperation under Climate Change at the COP27 "China Pavilion" on 15 November. The event aimed at sharing the development experience and promoting international cooperation on water science and technology under climate change. The meeting was chaired by Prof. WEI Yuansong from RCEES and attended by Mr. ZHANG Huasheng, Scientific Counselor of the Chinese Embassy in Egypt, Prof. CAO Jinghua, Executive Director of the ANSO Secretariat, Prof. YANG Min, Deputy Director of RCEES, and more than 80 experts and scholars from Egypt, Thailand, Sri Lanka and China (including representatives from Tsinghua University and North China Electric Power University).

Mr. ZHANG Huasheng introduced China's major achievements in environmental governance in his speech. He said China would continue to work with its partners to actively promote global climate governance and commit efforts to jointly building a community with a shared future for mankind.

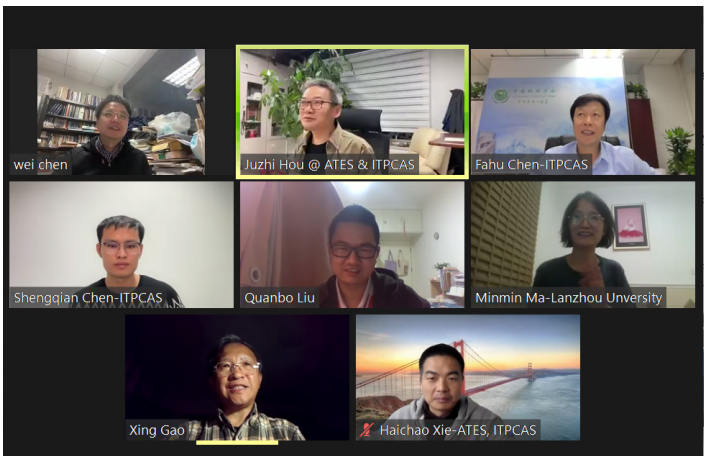
Prof. CAO Jinghua introduced the efforts and achievements ANSO has made in boosting international cooperation for the advancement of the UN Sustainable Development Goals (SDGs). He emphasized that only through joint actions and in partnerships could humankind address common challenges such as climate change.

Prof. YANG Min made a keynote presentation entitled "Chinese Solution for a Better Road to a Better Water", summarizing the achievements of RCEES in water science and technology cooperation within the Belt and Road regions, and the prospects of international cooperation surrounding the UN SDGs in the post-pandemic era.

Prof. WEI Yuansong introduced the cooperation experiences of the China-Sri Lanka Joint Research and Demonstration Center for Water Technology. Prof. Islam Al Zayed from National Water Research of Egypt, Prof. Ahmed Tawfik from National Research Center of Egypt, Prof. Thammarat Koottatep from Asian Institute of Technology, Thailand, Prof. Rohan Weerasooriya from National Institute of Fundamental Studies, Sri Lanka, Prof. ZUO Jian'e from Tsinghua University, China, and Prof. LI Jiqing from North China Electric Power University presented reports respectively entitled "Rainwater Harvesting to Reduce Climate Change Vulnerability", "Green Hydrogen Energy from Wastewater", "Climate Adaptive Sanitation Systems", "Water Desalination", "Applications of AI Technology in Urban Sewer Systems" and "Multi-objective Risk Analysis of Cascade Reservoirs in Yangtze River".

Part. 2

“Climate and Civilization Development along the Silk Road – Learn from the Past”



The workshop on "Climate and Civilization Development along the Silk Road – Learn from the Past" was organized by the ANSO Association for Trans-Eurasia Exchange and Silk-Road Civilization Development (ATES) and the Institute of Tibetan Plateau Research, Chinese Academy of Sciences (ITPCAS) on 8 November. It aimed to present and discuss new findings of Chinese scientists in Trans-Eurasia exchanges and Silk Road civilization studies.

Prof. CHEN Fahu, Member of the Chinese Academy of Sciences (CAS), Director of the ITPCAS, and founding president of ATES, introduced the latest progress on the climate and environmental changes, and their effects on the development of Silk Road civilizations. Representatives of the ATES Working Group delivered keynote speeches. Prof. GAO Xing from the Institute of Vertebrate Paleontology and Paleoanthropology, CAS, presented new evidence from the Paleolithic period in China, elaborating the context of the migration and cultural exchange of the Eurasian continent. Dr. MA Minmin from Lanzhou University introduced the prehistoric trans-Eurasia communication process and its effects on the survival strategies of Chinese populations. Prof. CHEN Wei from the Institute for the History of Natural Sciences, CAS, compared historical technological achievements in China with countries along the Silk Road. Prof. LIU Quanbo from Lanzhou University emphasized the significance of the westbound literature. Dr. CHEN Shengqian from the ITPCAS presented his integrated study on Holocene moisture change over Arid Central Asia (ACA).

Following the presentations, the participants discussed the development and scopes of ATES. Prof. CHEN Fahu emphasized that learning from the past is essential to coping with the threats from current climate and environmental change. The prosperity of the Silk Road in historical periods with active trans-continental exchanges is the best reflection for pursuing a shared future for mankind.

The event was broadcasted by China Environment News online and attracted more than 300 scientists and an audience of over 40,000.

Part. 3

ANSO Collaborative Research: Achievements in Ganges-Brahmaputra-Meghna River Basin Shown in the China Pavilion of COP27

On 6 November, the research team of the ANSO collaborative research project entitled "Integrated Flood Services and Climate Change Adaptation for the Ganges-Brahmaputra-Meghna (GBM) River Basin" participated in the China Pavilion of UNFCCC COP27.

Associate Professor XU Ximeng, a research group member, gave a keynote speech entitled "Flood Monitoring Service in the Ganges-Brahmaputra-Meghna River Basin". He introduced the Flood and Drought Risk Information Service System of the GBM River Basin which has been established to provide quasi real time disaster information services, including soil drought, flood inundation depth and flood recurrence period for Bangladesh, Nepal, India and other countries. Associate Prof. HE Li, a research group member, gave a keynote speech entitled "Flood Hazards and Mitigation Measures in the Ganges-Brahmaputra-Meghna River Basin". She introduced the field investigation and disaster analysis of flood disasters in Melamchi, Nepal in 2021. This research revealed the causes of different types of flood disasters in Nepal, and proposed adaptive strategies according to local situations. The research results play an active role in flood and drought disaster prevention and climate change response in relevant "Belt and Road" countries and regions by providing a disaster information services in the GBM Basin. It also helps support the realization of the UN SDGs and promote the construction of a science and technology community with a shared future for mankind.

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